

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

ALLEY CROPPING

(Acre)

CODE 311

DEFINITION

Trees or shrubs planted in a set or series of single or multiple rows with agronomic, horticultural crops or forages produced in the alleys between the rows of woody plants.

PURPOSES

- Produce tree and/or shrub products (wood, nuts, berries, fodder, mulch, etc.) along with crops or forages.
- Improve crop or forage quality and quantity by enhancing microclimatic conditions.
- Reduce surface water runoff and erosion.
- Reduce wind erosion.
- Improve utilization and recycling of soil nutrients.
- Reduce subsurface water quantity or alter water table depths.
- Provide or enhance wildlife habitat.
- Enhance biological pest management.
- Improve crop diversity, quantity, quality and economic returns.
- Decrease movement offsite of nutrients or chemicals.
- Enhance the aesthetics of the area.

CONDITIONS WHERE PRACTICE

APPLIES

On all lands where trees, shrubs, crops and/or forages can be grown in combination and improvement of the economic or environmental conditions is desired.

CRITERIA

General Criteria Applicable To All Purposes

Plant Selection:

Combinations of crops or forages and woody plants shall be compatible and complementary, and provide the products and crops that meet landowner objectives.

- Plants shall be adapted to the climatic region and the soil resource, marketable, and suited to the landowner's equipment and management capabilities.
- Crop or forage sequence and woody species selection shall be determined using a nutrient management plan. See Nutrient Management standard (590). Select crops, forages and woody plants that maximize the utilization and recycling of soil nutrients, animal wastes and plant residues and that maintain soil organic matter content.
- Moisture conservation or supplemental watering shall be provided for plant

establishment and growth where natural precipitation is too low for the selected species.

- Crops or forages and woody plants shall be selected for rooting depths and water requirements not to exceed available soil water.
- Select pest resistant plant varieties.
- Avoid selecting tree or shrub species, which provide habitat to pests of the accompanying crop or forage.

Design:

- The distance between the sets of trees or shrubs will be determined by tree or shrub management objectives.
- Light requirements and growth period of the crops or forages in the alleys.
- Erosion control needs.
- Machinery widths and turning areas.

Crops (woody and herbaceous) shall be grown in a planned conservation management system.

Soil erosion will be controlled by vegetative or other means until the alley cropping design is fully functional. See standards for Conservation Cover (327) or Cover and Green Manure Crop (340).

Avoid planting trees or shrubs where they will interfere with structures and above or below ground utilities.

Planting dates, care in handling, and planting the seed, seedlings, or cuttings will be accomplished to assure acceptable plant survival.

Only viable and high quality planting stock or seed will be used for establishing the tree or shrub rows.

Site preparation shall be sufficient for establishment and growth of selected species and appropriate for the site.

Comply with applicable laws and regulations, including the state's Best Management Practices (BMPs).

Additional Criteria to Reduce Surface Water Runoff and Erosion

Tree or shrub rows will be oriented on or near the contour to reduce water erosion.

To reduce surface water runoff and erosion, herbaceous ground cover will be established in conjunction with the tree or shrub rows. See standards for Pasture Planting (512), Range Planting (550) and Conservation Cover (327) for species to use for species selection and planting specifications.

To Reduce Wind Erosion, tree or shrub rows will be oriented as close as possible perpendicular to erosive winds.

Selected species of trees and shrubs will be relatively deep rooted to encourage infiltration. See standards for Cross Wind practices (589 A, B and C) and Windbreak Establishment (380).

CONSIDERATIONS

Crop, forage, tree and/or shrub varieties selected should be tolerant to agricultural chemicals that will be used in the management of the crops, forages, trees or shrubs.

Species diversity including use of native species should be considered to avoid loss of function due to species-specific pests.

High value trees or shrubs should be selected to maximize economic returns.

Consider cultural resources when planning this practice. This practice may adversely affect cultural resources and should comply with GM 420, Part 401, during planning, prior to installation and during maintenance.

Anticipate possible off-site effects and modify the practice design accordingly.

Coppice ability of selected species of trees and shrubs should be considered when they are to be pruned periodically.

intended purpose of the practice. Use the standards for Nutrient Management (590) and Pest Management (595).

PLANS AND SPECIFICATIONS

Plans and Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

The trees, shrubs, crops, and/or forages will be inspected periodically and protected from adverse impacts including insects, diseases or competing vegetation. The trees or shrubs will also be protected from fire and damage from livestock or wildlife.

All other specified maintenance measures and techniques of tree/shrub establishment will continue until plant survival and establishment are assured. This includes replacement of dead and dying trees or shrubs and control of undesirable competing vegetation.

Any removals of tree or shrub products, use of agricultural chemicals, and maintenance operations shall be consistent with the